

WHAT IS CLAIMED IS:

1. A circuit for driving a gate of a power metal-oxide semiconductor field effect transistor (MOSFET) in a digital audio amplifier including a power PMOSFET transistor in which a first power source voltage is applied to a source and an output terminal is connected to a drain; a power NMOSFET transistor in which the output terminal is connected to a drain and a second power source voltage is applied to a source; a gate controller which uses a third power source voltage which is lower than the first power source voltage and a fourth power source voltage which is lower than the second power source voltage, and controls gates of the power PMOSFET and NMOSFET transistors; and an output filter which is connected to the output terminal and has an inductor and a capacitor, the circuit comprising:

a first resistance connected between the first power source voltage and the gate of the power PMOSFET transistor;

a second resistance connected between the second power source voltage and the gate of the power NMOSFET transistor;

a first capacitor connected between an output terminal of the gate controller and the gate of the power PMOSFET transistor;

a second capacitor connected between the output terminal of the gate controller and the gate of the power NMOSFET transistor;

a first diode connected between the output terminal of the gate controller and the gate of the power PMOSFET transistor; and

a second diode connected between the output

terminal of the gate controller and the gate of the power NMOSFET transistor.

2. The circuit of claim 1, wherein the first
5 and second diodes are zener diodes.

3. A circuit for driving a gate of a power MOSFET in a digital audio amplifier including a power PMOSFET transistor in which a first power source
10 voltage is applied to a source and an output terminal is connected to a drain; a power NMOSFET transistor in which the output terminal is connected to a drain and a second power source voltage is applied to a source; a gate controller which uses a third power source
15 voltage which is lower than the first power source voltage and a fourth power source voltage which is lower than the second power source voltage, and controls gates of the power PMOSFET and NMOSFET transistors; and an output filter which is connected
20 to the output terminal and has an inductor and a capacitor, the circuit comprising:

a first resistance connected between the first power source voltage and the gate of the power PMOSFET transistor;

25 a second resistance connected between the second power source voltage and the gate of the power NMOSFET transistor;

a first capacitor connected between an output terminal of the gate controller and the gate of the
30 power PMOSFET transistor;

a second capacitor connected between the output terminal of the gate controller and the gate of the power NMOSFET transistor;

a first diode, one end of which is connected to

the first power source voltage;

a second diode, one end of which is connected to the other end of the first diode and other end of which is connected to the gate of the power PMOSFET transistor;

a third diode, one end of which is connected to the second power source voltage; and

a fourth diode, one end of which is connected to the other end of the third diode and other end of which is connected to the gate of the power NMOSFET transistor.

4. A circuit for driving a gate of a power MOSFET in a digital audio amplifier including a power PMOSFET transistor in which a first power source voltage is applied to a source and an output terminal is connected to a drain; a power NMOSFET transistor in which the output terminal is connected to a drain and a second power source voltage is applied to a source; a gate controller which uses a third power source voltage which is lower than the first power source voltage and a fourth power source voltage which is lower than the second power source voltage, and controls gates of the power PMOSFET and NMOSFET transistors; and an output filter which is connected to the output terminal and has an inductor and a capacitor, the circuit comprising:

a first resistance connected between the first power source voltage and the gate of the power PMOSFET transistor;

a second resistance connected between the second power source voltage and the gate of the power NMOSFET transistor;

a first capacitor, one end of which is connected

an output terminal of the gate controller;

a second capacitor, one end of which is connected to the output terminal of the gate controller;

a first diode, one end of which is connected to the first power source voltage and other end of which is connected to the gate of the power PMOSFET transistor;

a second diode, one end of which is connected to the other end of the first capacitor and other end of which is connected to the gate of the power PMOSFET transistor;

a third diode, one end of which is connected to the second power source voltage and other end of which is connected to the gate of the power NMOSFET transistor; and

a fourth diode, one end of which is connected to the other end of the second capacitor and other end of which is connected to the gate of the power NMOSFET transistor.

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5. The circuit of claim 3 or 4, wherein the first through fourth diodes are zener diodes.

6. The circuit of claim 3 or 4 further comprising a current source which is connected to the gates of the power PMOSFET and NMOSFET transistors and the output terminal of the gate controller.

7. The circuit of claim 6, wherein the current source comprises:

a resistance, one end of which is connected to the output terminal of the gate controller;

a NPN bipolar transistor, an emitter of which is connected to other end of the resistance, a base of

which is connected to a grounding voltage, and a collector of which is connected to the gate of the power PMOSFET transistor; and

5 a PNP bipolar transistor, an emitter of which is connected to the other end of the resistance, a base of which is connected to a grounding voltage, and a collector of which is connected to the gate of the power NMOSFET transistor.

10 8. The circuit of claim 6, wherein the current source comprises:

a resistance, one end of which is connected to the output terminal of the gate controller;

15 a NMOSFET transistor, a source of which is connected to other end of the resistance, a gate of which is connected to a grounding voltage, and a drain of which is connected to the gate of the power PMOSFET transistor; and

20 a PMOSFET transistor, a source of which is connected to the other end of the resistance, and a gate of which is connected to a grounding voltage, and a drain of which is connected to the gate of the power NMOSFET transistor.

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